

Preliminary Amendment

U.S. Application Serial No. (To Be Assigned)

Attorney Docket: MR/97-001.D.C.C.C1

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I. AMENDMENTS TO THE SPECIFICATION

The following sections have been revised in the manner required by 37 C.F.R. §1.121 (with the added text underlined and the deleted text stricken-through), as amended July 30, 2003.

A. In The "TITLE" Section

On page 1, please change the Title as indicated below:

~~MAGNETIC RESONANCE IMAGING RECEIVER/TRANSMITTER COILS~~

TRANSMIT/RECEIVE PHASED ARRAY COIL SYSTEM

B. In The "ABSTRACT OF THE DISCLOSURE" Section

Please amend the ABSTRACT section as indicated below.

ABSTRACT OF THE DISCLOSURE

A transmit/receive phased array coil system is presented for use with a magnetic resonance imaging (MRI) system. It includes first and second coils and an interface subsystem. The first and second coils cooperate to define an overlap region, thus forming a phased array coil subsystem. Connected to the phased array coil subsystem, the interface subsystem can be switched between (I) a transmit state wherein a magnetic field of substantial uniformity is transmitted not only over the first and second regions defined by the first and second coils, respectively, but also over the overlap region; and (II) a receive state wherein the interface subsystem receives a response of an anatomical structure within the phased array coil subsystem to the magnetic field and conveys it to the MRI system.

~~[A magnetic resonance imaging receiver/transmitter coil system for providing images for regions of interest includes a first phased array formed of a plurality of electrically conductive members and defining an array volume and a second phased array formed of a second plurality of electrically conductive members and disposed at least partially within the defined array volume. At least one of the first and second phased arrays is adapted to apply a magnetic field to the defined array volume. At least one of the first and second phased arrays is further adapted to receive said applied magnetic field. The first phased array is extendible to define a further array volume and is provided with a switch for electrically coupling and decoupling an extension to effectively extend the length of the first phased array and thereby define the further array volume. In this manner the length of the first phased array is effectively extended to approximately twice its unextended length.]~~

C. In The "SUMMARY OF THE INVENTION" Section

Please amend the SUMMARY OF THE INVENTION section as indicated below.

SUMMARY OF THE INVENTION

In a presently preferred embodiment, the invention provides a transmit/receive (T/R) phased array coil system for use with a magnetic resonance imaging (MRI) system. The T/R phased array coil system includes a first coil, a second coil, and an interface subsystem. The first coil defines a first region, and the second coil defines a second region. The first and second coils cooperate to define an overlap region in which one of the coils is partially overlapped by the other to form a phased array coil subsystem. Connected to the phased array coil subsystem, the interface subsystem preferably includes a power splitter, an attenuator, a phase compensator, and a plurality of switches for enabling the interface subsystem to be switched between a transmit state and a receive state. In the transmit state, the power splitter allocates radio frequency (RF) power received from the MRI system between the first and second coils, with the attenuator reducing the RF power directed to at least one of the first and second coils. This allows a first magnetic field to be applied through the first coil to the first region corresponding thereto and a second magnetic field to be applied through the second coil to the second region corresponding thereto. The phase compensator affects the phase relationship between the first and second magnetic fields so as to cause a resultant magnetic field to be substantially uniform not only over at least portions of the first and second regions but also over the overlap region. This enables the phased array coil subsystem to apply the resultant magnetic field to an anatomical structure placed within at least one of the first region, the second region and the overlap region. In the receive state, the interface subsystem receives from the phased array coil subsystem a response of the anatomical structure to the resultant magnetic field and conveys the response to the MRI system.

~~[A magnetic resonance imaging receiver/transmitter coil system for providing images for regions of interest includes a first phased array coil element formed of a plurality of electrically conductive members and defining an array volume and a second phased array coil element~~

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~~formed of a second plurality of electrically conductive members and disposed at least partially within the defined array volume. At least one of the first and second phased arrays is adapted to apply a magnetic field to the defined array volume. At least one of the first and second phased arrays is further adapted to receive said applied magnetic field. The first phased array is extendible to define a further array volume and is provided with a switch for electrically coupling and decoupling an extension to effectively extend the length of the first phased array and thereby define the further array volume. In this manner the length of the first phased array is effectively extended to approximately twice its unextended length.]~~